6. Networking

```
Command Prompt - pwsh.exe                                                                          —  □  ×
PS C:\Users\Divine Seroy\Docker> docker network ls
NETWORK ID      NAME        DRIVER      SCOPE
0d8c87426592    bridge      bridge      local
5acd5dfd24ef    host        host        local
be309cfe36f9    none        null        local
PS C:\Users\Divine Seroy\Docker> docker run --rm -d --name dummy dts0/ping:1.0
f43fca15bb8d0e3248151ba5079013d007a7408afddafb45b584bc1731a75992
PS C:\Users\Divine Seroy\Docker> docker network inspect bridge
[
    {
        "Name": "bridge",
        "Id": "0d8c8742659266a996875679141bbbbec904c728909eb608da598c2909e5114b",
        "Created": "2021-06-15T01:31:56.108066Z",
        "Scope": "local",
        "Driver": "bridge",
        "EnableIPv6": false,
        "IPAM": {
            "Driver": "default",
            "Options": null,
            "Config": [
                {
                    "Subnet": "172.17.0.0/16",
                    "Gateway": "172.17.0.1"
                }
            ]
        },
        "Internal": false,
        "Attachable": false,
        "Ingress": false,
        "ConfigFrom": {
            "Network": ""
        },
        "ConfigOnly": false,
        "Containers": {
            "f43fca15bb8d0e3248151ba5079013d007a7408afddafb45b584bc1731a75992": {
                "Name": "dummy",
                "EndpointID": "8ef9c464a4062a40cbfcc7cbb39383badb6580d6baedf1c4fa7c016539ac7587",
                "MacAddress": "02:42:ac:11:00:02",
                "IPv4Address": "172.17.0.2/16",
                "IPv6Address": ""
            }
        },
        "Options": {
```

```
Command Prompt - pwsh.exe                                                                          —  □  ×
        "Created": "2021-06-15T01:31:56.108066Z",
        "Scope": "local",
        "Driver": "bridge",
        "EnableIPv6": false,
        "IPAM": {
            "Driver": "default",
            "Options": null,
            "Config": [
                {
                    "Subnet": "172.17.0.0/16",
                    "Gateway": "172.17.0.1"
                }
            ]
        },
        "Internal": false,
        "Attachable": false,
        "Ingress": false,
        "ConfigFrom": {
            "Network": ""
        },
        "ConfigOnly": false,
        "Containers": {
            "f43fca15bb8d0e3248151ba5079013d007a7408afddafb45b584bc1731a75992": {
                "Name": "dummy",
                "EndpointID": "8ef9c464a4062a40cbfcc7cbb39383badb6580d6baedf1c4fa7c016539ac7587",
                "MacAddress": "02:42:ac:11:00:02",
                "IPv4Address": "172.17.0.2/16",
                "IPv6Address": ""
            }
        },
        "Options": {
            "com.docker.network.bridge.default_bridge": "true",
            "com.docker.network.bridge.enable_icc": "true",
            "com.docker.network.bridge.enable_ip_masquerade": "true",
            "com.docker.network.bridge.host_binding_ipv4": "0.0.0.0",
            "com.docker.network.bridge.name": "docker0",
            "com.docker.network.driver.mtu": "1500"
        },
        "Labels": {}
    }
]
PS C:\Users\Divine Seroy\Docker> docker run --rm -d -e PING_TARGET=172.17.0.2 --name pinger dts0/ping:1.0
a812359ae768a991e22e06bc4ffa95c1b05652c9f5c15df353870e6708b0ea94
```

```
            }
        },
        "Options": {
            "com.docker.network.bridge.default_bridge": "true",
            "com.docker.network.bridge.enable_icc": "true",
            "com.docker.network.bridge.enable_ip_masquerade": "true",
            "com.docker.network.bridge.host_binding_ipv4": "0.0.0.0",
            "com.docker.network.bridge.name": "docker0",
            "com.docker.network.driver.mtu": "1500"
        },
        "Labels": {}
    }
]
PS C:\Users\Divine Seroy\Docker> docker run --rm -d -e PING_TARGET=172.17.0.2 --name pinger dts0/ping:1.0
a812359ae768a991e22e06bc4ffa95c1b05652c9f5c15df353870e6708b0ea94
PS C:\Users\Divine Seroy\Docker> docker ps
CONTAINER ID   IMAGE           COMMAND              CREATED            STATUS            PORTS     NAMES
a812359ae768   dts0/ping:1.0   "sh -c 'ping $PING_T…"  33 seconds ago   Up 33 seconds             pinger
f43fca15bb8d   dts0/ping:1.0   "sh -c 'ping $PING_T…"  About a minute ago  Up About a minute        dummy
PS C:\Users\Divine Seroy\Docker> docker logs pinger
PING 172.17.0.2 (172.17.0.2) 56(84) bytes of data.
64 bytes from 172.17.0.2: icmp_seq=1 ttl=64 time=0.104 ms
64 bytes from 172.17.0.2: icmp_seq=2 ttl=64 time=0.081 ms
64 bytes from 172.17.0.2: icmp_seq=3 ttl=64 time=0.081 ms
64 bytes from 172.17.0.2: icmp_seq=4 ttl=64 time=0.086 ms
64 bytes from 172.17.0.2: icmp_seq=5 ttl=64 time=0.084 ms
64 bytes from 172.17.0.2: icmp_seq=6 ttl=64 time=0.081 ms
64 bytes from 172.17.0.2: icmp_seq=7 ttl=64 time=0.063 ms
64 bytes from 172.17.0.2: icmp_seq=8 ttl=64 time=0.080 ms
64 bytes from 172.17.0.2: icmp_seq=9 ttl=64 time=0.053 ms
64 bytes from 172.17.0.2: icmp_seq=10 ttl=64 time=0.081 ms
64 bytes from 172.17.0.2: icmp_seq=11 ttl=64 time=0.057 ms
64 bytes from 172.17.0.2: icmp_seq=12 ttl=64 time=0.083 ms
64 bytes from 172.17.0.2: icmp_seq=13 ttl=64 time=0.077 ms
64 bytes from 172.17.0.2: icmp_seq=14 ttl=64 time=0.083 ms
64 bytes from 172.17.0.2: icmp_seq=15 ttl=64 time=0.078 ms
64 bytes from 172.17.0.2: icmp_seq=16 ttl=64 time=0.053 ms
64 bytes from 172.17.0.2: icmp_seq=17 ttl=64 time=0.112 ms
64 bytes from 172.17.0.2: icmp_seq=18 ttl=64 time=0.055 ms
64 bytes from 172.17.0.2: icmp_seq=19 ttl=64 time=0.354 ms
64 bytes from 172.17.0.2: icmp_seq=20 ttl=64 time=0.081 ms
64 bytes from 172.17.0.2: icmp_seq=21 ttl=64 time=0.082 ms
64 bytes from 172.17.0.2: icmp_seq=22 ttl=64 time=0.084 ms
```

```
f43fca15bb8d   dts0/ping:1.0   "sh -c 'ping $PING_T…"  2 minutes ago   Up 2 minutes             dummy
PS C:\Users\Divine Seroy\Docker> docker stop dummy
dummy
PS C:\Users\Divine Seroy\Docker> docker network create skynet
7d0784a229b4fe59ba4e4e76340f12c1c819f053bfbe6a187b392af9bbc45801
PS C:\Users\Divine Seroy\Docker> docker network ls
NETWORK ID     NAME     DRIVER   SCOPE
0d8c87426592   bridge   bridge   local
5acd5dfd24ef   host     host     local
be309cfe36f9   none     null     local
7d0784a229b4   skynet   bridge   local
PS C:\Users\Divine Seroy\Docker> docker network inspect skynet
[
    {
        "Name": "skynet",
        "Id": "7d0784a229b4fe59ba4e4e76340f12c1c819f053bfbe6a187b392af9bbc45801",
        "Created": "2021-06-15T07:49:45.1183098Z",
        "Scope": "local",
        "Driver": "bridge",
        "EnableIPv6": false,
        "IPAM": {
            "Driver": "default",
            "Options": {},
            "Config": [
                {
                    "Subnet": "172.18.0.0/16",
                    "Gateway": "172.18.0.1"
                }
            ]
        },
        "Internal": false,
        "Attachable": false,
        "Ingress": false,
        "ConfigFrom": {
            "Network": ""
        },
        "ConfigOnly": false,
        "Containers": {},
        "Options": {},
        "Labels": {}
    }
]
PS C:\Users\Divine Seroy\Docker> _
```

```
pinger
PS C:\Users\Divine Seroy\Docker> docker run --rm -d --network skynet -e PING_TARGET=dummy --name pinger dts0/ping:1.0
7839d91ee0db9b8b85f3bc76d2e6e67321b72705dd899e7ae4e6e9e831f8c9b6
PS C:\Users\Divine Seroy\Docker> docker logs pinger
PING dummy (172.18.0.2) 56(84) bytes of data.
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=1 ttl=64 time=0.152 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=2 ttl=64 time=0.081 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=3 ttl=64 time=0.096 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=4 ttl=64 time=0.108 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=5 ttl=64 time=0.076 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=6 ttl=64 time=0.083 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=7 ttl=64 time=0.060 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=8 ttl=64 time=0.089 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=9 ttl=64 time=0.078 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=10 ttl=64 time=0.073 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=11 ttl=64 time=0.065 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=12 ttl=64 time=0.084 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=13 ttl=64 time=0.088 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=14 ttl=64 time=0.082 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=15 ttl=64 time=0.061 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=16 ttl=64 time=0.089 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=17 ttl=64 time=0.084 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=18 ttl=64 time=0.057 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=19 ttl=64 time=0.091 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=20 ttl=64 time=0.085 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=21 ttl=64 time=0.058 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=22 ttl=64 time=0.089 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=23 ttl=64 time=0.091 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=24 ttl=64 time=0.087 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=25 ttl=64 time=0.058 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=26 ttl=64 time=0.089 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=27 ttl=64 time=0.078 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=28 ttl=64 time=0.091 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=29 ttl=64 time=0.090 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=30 ttl=64 time=0.083 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=31 ttl=64 time=0.084 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=32 ttl=64 time=0.059 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=33 ttl=64 time=0.088 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=34 ttl=64 time=0.094 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=35 ttl=64 time=0.084 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=36 ttl=64 time=0.089 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=37 ttl=64 time=0.083 ms
PS C:\Users\Divine Seroy\Docker>
```

```
PS C:\Users\Divine Seroy\Docker> docker ps
CONTAINER ID   IMAGE      COMMAND                  CREATED          STATUS          PORTS                     NAMES
4b396efc94f1   postgres   "docker-entrypoint.s…"   5 seconds ago    Up 4 seconds    0.0.0.0:56129->5432/tcp   widgetdb
4f7ef7b2c7ec   postgres   "docker-entrypoint.s…"   45 seconds ago   Up 44 seconds   0.0.0.0:53031->5432/tcp   gadgetdb
PS C:\Users\Divine Seroy\Docker> docker exec -it widgetdb /bin/bash
root@4b396efc94f1:/# psql -U postgres
psql (13.3 (Debian 13.3-1.pgdg100+1))
Type "help" for help.

postgres=# \1
invalid command \1
Try \? for help.
postgres=# \q
root@4b396efc94f1:/# psql -U postgres -h gadgetdb
Password for user postgres:
psql: error: FATAL:  password authentication failed for user "postgres"
root@4b396efc94f1:/# psql -U postgres -h gadgetdb
Password for user postgres:
psql (13.3 (Debian 13.3-1.pgdg100+1))
Type "help" for help.

postgres=# \q
root@4b396efc94f1:/# exit
exit
PS C:\Users\Divine Seroy\Docker> docker stop widgetdb gadgetdb
widgetdb
gadgetdb
PS C:\Users\Divine Seroy\Docker> docker run --rm --name widgetdb --network skynet -p 5432:5432 -e POSTGRES_PASSWORD=password -d postgres
2295d0fda1347bb51255c96b54ab23e2e30b21065c9a4de86a09af34976277dc
PS C:\Users\Divine Seroy\Docker> psql
psql: The term 'psql' is not recognized as a name of a cmdlet, function, script file, or executable program.
Check the spelling of the name, or if a path was included, verify that the path is correct and try again.
PS C:\Users\Divine Seroy\Docker> psql -U postgres -h localhost
psql: The term 'psql' is not recognized as a name of a cmdlet, function, script file, or executable program.
Check the spelling of the name, or if a path was included, verify that the path is correct and try again.
PS C:\Users\Divine Seroy\Docker> docker stop widgetdb
widgetdb
PS C:\Users\Divine Seroy\Docker>
```